

WHAT IS CLAIMED IS

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1. An optical transmission apparatus with an optical add/drop function used in an optical wavelength multiplex network, comprising:

an optical branching coupler for dividing
10 an input wavelength multiplexed optical signal into a wavelength multiplexed optical signal, which is called a passing signal, and another wavelength multiplexed optical signal, which is called a dropping signal,

15 a filter for extracting a first optical signal at a predetermined wavelength from the dropping signal that is branched by the optical branching coupler,

a laser for generating a second optical
20 signal that is to be inserted,

a blocking filter for blocking a third optical signal contained in the passing signal that is branched by the optical branching coupler, said third optical signal having a wavelength that is the
25 same as the second optical signal that is to be inserted, and

an optical coupler for coupling the passing signal that is not blocked by and passes the blocking filter, and the second optical signal that
30 is to be inserted.

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2. The optical transmission apparatus as claimed in claim 1, wherein said blocking filter and said optical coupler are combined into one body.

5 3. The optical transmission apparatus as
claimed in claim 1, wherein said filter for
extracting the first optical signal at a
predetermined wavelength from the dropping signal
that is branched by the optical branching coupler is
10 capable of changing the wavelength of the first
optical signal to be extracted.

15 4. The optical transmission apparatus as
claimed in claim 1, wherein said laser is capable of
changing the wavelength of the second optical signal
to be generated.

20 5. The optical transmission apparatus as
25 claimed in claim 1, wherein said blocking filter
passes only a predetermined group of wavelengths.

30 6. The optical transmission apparatus as
claimed in claim 2, wherein said one body combining
said blocking filter and said optical coupler passes
only a predetermined group of wavelengths, and
35 inserts only a predetermined group of wavelengths.

7. The optical transmission apparatus as
claimed in claim 3, wherein said filter is one of an
5 AOTF, a dielectric multilayer filter, an FGB type
filter, and a Fabry-Perot type filter.

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8. The optical transmission apparatus as
claimed in claim 1, further comprising a protection
unit that comprises an optical coupler and an
optical switch.

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9. An optical wavelength multiplex network,
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the optical transmission apparatus as
claimed in claim 1, and

a double ring network that comprises a HUB.

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10. The optical wavelength multiplex
network as claimed in claim 9, wherein said HUB
30 comprises an optical demultiplexer, an optical
coupler, an optical switch, and an optical
multiplexer.

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11. The optical wavelength multiplex network as claimed in claim 9, wherein said HUB comprises an optical filter.

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12. The optical wavelength multiplex network as claimed in claim 9, wherein said HUB comprises an optical demultiplexer, a MEMS, and an optical multiplexer.

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13. The optical wavelength multiplex network as claimed in claim 9, wherein said HUB comprises a protection unit that comprises an optical coupler and an optical switch.

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